

REMARKS

Claims 1-15 were rejected under 35 USC 112, second paragraph. This rejection is respectfully traversed and should be withdrawn in light of the Amendment.

In particular, the term “fine” is deleted from claim 1. The Examiner has interpreted the term “board” to mean “a piece of wood.” While this meaning of “board” would be common among home-builders, the term “board” in this invention refers to a substrate such as that designated by “100” in Figure 2a. The substrate (100) of Figure 2a is referred to as “a board 100” on page 6, line 22. In claim 12, “a mixture structure of the oxide film and the nitrogen film” is deleted because “a mixture structure of the oxide film and the nitrogen film” includes “a mixture structure of the oxide film and the nitride film” (as now recited in claim 12) as an embodiment of the claimed layered structure.

In claim 12, the terms “a nitrogen film” and “a laminated structure” have been changed to --a nitride film-- and --a layered structure--, respectively. As persons of ordinary skill would recognize, the phrase “a nitrogen film” is an obvious error because nitrogen cannot form a film. Instead, a nitrogen containing film is a nitride film as now recited in claim 12. Lamination often requires an adhesive between layers. Applicants have amended “laminated” to “layered” to prevent any inadvertent misconstruction of claim 1 that it must require an adhesive between layers. There is no such requirement in this invention, though the claims do not exclude the possibility of having an adhesive between layers.

Claims 1-3, 7, 9-11, 13 and 15 were rejected as being anticipated by or, in the alternative, obvious over Dai. This rejection is respectfully traversed.

The Examiner states, “No differences are seen [between Dai and this invention], even though the description is different.” See page 3, line 3 of the Action. Applicants respectfully submit that Dai’s method is different from the method of this invention. To help the Examiner recognize the difference, Applicants first quote column 3, lines 43-63 of Dai:

FIGS. 1A-1C illustrate a method for synthesizing
individually distinct nanotubes on a silicon substrate that is

patterned with catalyst islands according to a first embodiment of the present invention. The principle procedures of the method have been reported in the art by the inventors (Nature 395, 878 (1998)), incorporated herein by reference. First, a layer of resist 10 is disposed and patterned on a top surface of a substrate 11, as illustrated in FIG. 1A. The substrate 11 is made of doped silicon with a layer of native oxide. Patterning on the resist 10 is typically performed by electron-beam lithography, producing holes 12 that expose the underlying substrate 11. The holes 12 are typically 5 microns in size, spaced at a distance of 10 microns apart. Next, a few drops of a catalyst material are placed on the surface of the substrate 11, filling the holes 12. The catalyst preparation includes mixing 15 mg of alumina nanoparticles, 0.05 mmol of $\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$, and 0.015 mmol of $\text{MoO}_2(\text{acac})_2$ in 15 ml of methanol. After the solvent (i.e., methanol) dries, the remaining resist is lifted off, revealing an array of isolated catalyst islands 13 on the substrate 11, as shown in FIG. 1B.

As stated in the above quote from Dai, the method of Dai first forms a resist layer on a substrate, then it patterns the resist to form holes that are filled with a catalyst such that the catalyst in the holes would contact the substrate, and finally the resist layer is lifted off “revealing an array of isolated catalyst islands 13 *on* the substrate 11.” *Id.* In contrast, the method of this invention carries out the step of “forming patterns of catalyst metal layer including a contact electrode pad on the insulating film.” In short, the isolated catalyst islands of Dai are *on the substrate* while Dai does *not* disclose patterns of catalyst metal layer *on an insulating film* such as the resist layer 10 of Dai. Thus, the method of this invention is totally different from that method of Dai.

Furthermore, in the subject invention, a catalyst metal layer is patterned to form catalyst patterns and a contact electrode pad, and *then* a carbon nanotube is grown between the catalyst patterns (see claim 1). On the other hand, Dai discloses first the formation of the isolated catalyst islands on a substrate, second the formation of a carbon nanotube between the catalyst islands, and finally *after the growth of carbon nanotube* Dai discloses the formation of the metal electrodes by post-processing, such as by electron beam lithography (see Dai, for example, column 2, lines 11-20, lines 38-46, and column 3, line 43 to column 4, line 11).

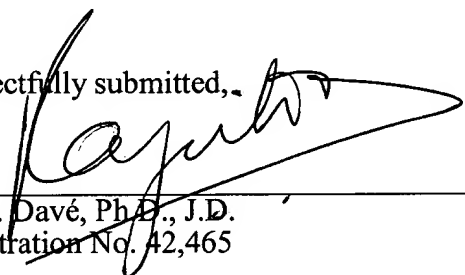
As recited in claim 1, in this invention, the contact electrode pad (as part of the catalyst metal layer) is formed (preferably in one-step along with the growth barrier layer) *before* growing the carbon nanotube. This is neither disclosed nor suggested in Dai. In Dai, the isolated catalyst islands are first formed and then the electrodes are deposited in a separate step *after* nanotube growth. Therefore, the subject invention is clearly different from Dai, and is neither anticipated nor obvious over Dai.

In light of this Amendment, a Notice of Allowance is respectfully solicited.

In the event that the transmittal letter is separated from this request and the Patent and Trademark Office determines that a fee is required, applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952 referencing docket no. 300602002200**.

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By:

Respectfully submitted, 

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